Amendments to the Claims

Claim 1 (currently amended) An electro-mechanical battery, comprising:

a housing;

a central core fixedly disposed in said housing, said central core having an internal raceway structure thereon;

a composite rotor enclosed in said housing around said central core, said composite rotor configured to spin about its vertical axis in said housing, said composite rotor having a plurality of closely spaced closed-circuit embedded conductive coils, said embedded conductive coils wrapped around a first composite core, said first composite core comprising carbon fiber filaments bound in an epoxy matrix; and

one or more set of permanent magnet arrays on said internal raceway and disposed between said composite rotor and said central core;~~—~~

~~a power input for storing a quantity of electrical power to said electro-mechanical battery; and~~

~~a power output for retrieving at least a portion of said quantity of electrical power from said electro-mechanical battery~~.

Claim 2 (cancelled)

Claim 3 (cancelled)

Claim 4 (currently amended): The electro-mechanical battery of claim ~~3~~ 1, wherein said composite rotor further comprises a second composite core outwardly located from said first composite core and a plurality of strands of composite filaments wrapped around said first composite core and said second composite core, said second composite core comprising carbon fiber filaments bound in an epoxy matrix.

Claim 5 (original): The electro-mechanical battery of claim 4, wherein said plurality of strands of composite filaments comprises a first carbon filament layer and a second carbon filament layer, said first carbon filament layer wrapped around said first composite core and said second composite core in a first continuous filament spiral-wound pattern.

Claim 6 (original): The electro-mechanical battery of claim 5, wherein said second carbon filament layer is wrapped around said first carbon filament layer in a second continuous filament spiral-wound pattern, said second continuous filament spiral-wound pattern applied in a counter-rotating direction to said first continuous filament spiral-wound pattern.

Claim 7 (original): The electro-mechanical battery of claim 6 further comprising a third carbon filament layer wrapped around said second carbon filament layer, said third carbon filament layer wrapped around said second carbon filament layer in sequential planes radial to the vertical axis of said rotor.

Claim 8 (original): The electro-mechanical battery of claim 5, wherein said second carbon filament layer is wrapped around said first carbon filament layer in a pattern comprised of sequential planes radial to the vertical axis of said rotor.

Claim 9 (original): The electro-mechanical battery of claim 1, wherein said one or more sets of permanent magnet arrays comprises a first ring of magnets forming an upper axial magnet array, a second ring of magnets forming a central radial magnet array and a third ring of magnets forming a lower axial magnet array.

Claim 10 (original): The electro-mechanical battery of claim 9, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 11 (original): The electro-mechanical battery of claim 1, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 12 (original): The electro-mechanical battery of claim 1, wherein said composite rotor has a substantially teardrop-shaped cross-section.

Claim 13 (currently amended): The electro-mechanical battery of claim 1, wherein said composite rotor has an outside diameter to inside diameter ratio of approximately 2 to 1.

Claim 14 (original): The electro-mechanical battery of claim 1 further comprising a conductive coil disposed between said composite rotor and said one or more sets of permanent magnet arrays.

Claim 15 (original): The electro-mechanical battery of claim 14 further comprising an interface hub interconnecting said conductive coil to said composite rotor.

Claim 16 (original): The electro-mechanical battery of claim 1, wherein said housing is evacuated prior to use of said electro-mechanical battery.

Claim 17 (currently amended): An electro-mechanical battery, comprising:

a mounting structure;

a central core disposed on said mounting structure, said core having an internal raceway structure thereon;

a composite rotor disposed around said central core, said rotor configured to spin about its vertical axis around said central core, said composite rotor having a plurality of closely spaced closed-circuit embedded conductive coils, said embedded conductive coils wrapped around a first

composite core, said first composite core comprising carbon fiber filaments bound in an epoxy matrix; and

one or more set of permanent magnet arrays on said internal raceway and disposed between said composite rotor and said central core;

~~a power input for storing a quantity of electrical power to said electro-mechanical battery; and~~

~~a power output for retrieving at least a portion of said quantity of electrical power from said electro-mechanical battery~~.

Claim 18 (cancelled)

Claim 19 (cancelled)

Claim 20 (currently amended) The electro-mechanical battery of claim ~~19~~ 17, wherein said composite rotor further comprises a second composite core outwardly located from said first composite core and a plurality of strands of composite filaments wrapped around said first composite core and said second composite core, said second composite core comprising carbon fiber filaments bound in an epoxy matrix.

Claim 21 (original) The electro-mechanical battery of claim 20, wherein said plurality of strands of composite filaments comprises a first carbon filament layer and a second carbon filament layer, said first carbon filament layer wrapped around said first composite core and said second composite core in a first continuous filament spiral-wound pattern.

Claim 22 (original) The electro-mechanical battery of claim 21, wherein said second carbon filament layer is wrapped around said first carbon filament layer in a second continuous filament spiral-wound pattern, said second continuous filament spiral-wound pattern applied in a counter-rotating direction to said first continuous filament spiral-wound pattern.

Claim 23 (original) The electro-mechanical battery of claim 22 further comprising a third carbon filament layer wrapped around said second carbon filament layer, said third carbon filament layer wrapped around said second carbon filament layer in sequential planes radial to the vertical axis of said rotor.

Claim 24 (original) The electro-mechanical battery of claim 17, wherein said one or more sets of permanent magnet arrays comprises a first ring of magnets forming an upper axial magnet array, a second ring of magnets forming a central radial magnet array and a third ring of magnets forming a lower axial magnet array.

Claim 25 (original) The electro-mechanical battery of claim 24, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 26 (original) The electro-mechanical battery of claim 17, wherein said composite rotor has a substantially teardrop-shaped cross-section.

Claim 27 (original) The electro-mechanical battery of claim 17, wherein said rotor has an outside diameter to inside diameter ratio of approximately 2 to 1.

Claims 28-47 (cancelled)

Claim 48 (new) : An electro-mechanical battery, comprising:

a housing;

a central core fixedly disposed in said housing, said central core having an internal raceway structure thereon;

a composite rotor enclosed in said housing around said central core, said composite rotor configured to spin about its vertical axis in said housing, said composite rotor having a first composite core and a second composite core, each of said first composite core and said second composite core comprising carbon fiber filaments bound in an epoxy matrix, said second composite core outwardly located from said first composite core;

a plurality of closely spaced closed-circuit embedded conductive coils wrapped around said first composite core;

a plurality of strands of composite filaments wrapped around said first composite core and said second composite core, said plurality of strands of composite filaments comprising a first carbon filament layer and a second carbon filament layer, said first carbon filament layer wrapped around said first composite core and said second composite core in a first continuous filament spiral-wound pattern, said second carbon filament layer is wrapped around said first carbon filament layer in a pattern comprised of sequential planes radial to the vertical axis of said rotor; and

one or more set of permanent magnet arrays on said internal raceway and disposed between said composite rotor and said central core.

Claim 49 (new) : The electro-mechanical battery of claim 48, wherein said one or more sets of permanent magnet arrays comprises a first ring of magnets forming an upper axial magnet array, a second ring of magnets forming a central radial magnet array and a third ring of magnets forming a lower axial magnet array.

Claim 50 (new) : The electro-mechanical battery of claim 49, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 51 (new) : The electro-mechanical battery of claim 48, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 52 (new) : The electro-mechanical battery of claim 48, wherein said composite rotor has a substantially teardrop-shaped cross-section.

Claim 53 (new) : The electro-mechanical battery of claim 48, wherein said rotor has an outside diameter to inside diameter ratio of approximately 2 to 1.

Claim 54 (new) : The electro-mechanical battery of claim 48 further comprising a conductive coil disposed between said composite rotor and said one or more sets of permanent magnet arrays.

Claim 55 (new) : The electro-mechanical battery of claim 54 further comprising an interface hub interconnecting said conductive coil to said composite rotor.

Claim 56 (new) : The electro-mechanical battery of claim 48, wherein said housing is evacuated prior to use of said electro-mechanical battery.

Claim 57 (new) : An electro-mechanical battery, comprising:

a housing;

a central core fixedly disposed in said housing, said central core having an internal raceway structure thereon;

a composite rotor enclosed in said housing around said central core, said composite rotor configured to spin about its vertical axis in said housing, said composite rotor configured in a substantially teardrop-shaped cross-section; and

one or more set of permanent magnet arrays on said internal raceway and disposed between said composite rotor and said central core.

Claim 58 (new) : The electro-mechanical battery of claim 57, wherein said composite rotor further comprises a second composite core outwardly located from said first composite core and a plurality of strands of composite filaments wrapped around said first composite core and said second composite core, said second composite core comprising carbon fiber filaments bound in an epoxy matrix.

Claim 59 (new) : The electro-mechanical battery of claim 58, wherein said plurality of strands of composite filaments comprises a first carbon filament layer and a second carbon filament layer, said first carbon filament layer wrapped around said first composite core and said second composite core in a first continuous filament spiral-wound pattern.

Claim 60 (new) : The electro-mechanical battery of claim 59, wherein said second carbon filament layer is wrapped around said first carbon filament layer in a second continuous filament spiral-wound pattern, said second continuous filament spiral-wound pattern applied in a counter-rotating direction to said first continuous filament spiral-wound pattern.

Claim 61 (new) : The electro-mechanical battery of claim 60 further comprising a third carbon filament layer wrapped around said second carbon filament layer, said third carbon filament layer wrapped around said second carbon filament layer in sequential planes radial to the vertical axis of said rotor.

Claim 62 (new) : The electro-mechanical battery of claim 59, wherein said second carbon filament layer is wrapped around said first carbon filament layer in a pattern comprised of sequential planes radial to the vertical axis of said rotor.

Claim 63 (new) : The electro-mechanical battery of claim 57, wherein said one or more sets of permanent magnet arrays comprises a first ring of magnets forming an upper axial magnet array, a second ring of magnets forming a central radial magnet array and a third ring of magnets forming a lower axial magnet array.

Claim 64 (new) : The electro-mechanical battery of claim 63, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 65 (new) : The electro-mechanical battery of claim 57, wherein each of said sets of permanent magnet arrays is configured into a Halbach Array.

Claim 66 (new) : The electro-mechanical battery of claim 57, wherein said rotor has an outside diameter to inside diameter ratio of approximately 2 to 1.

Claim 67 (new) : The electro-mechanical battery of claim 57 further comprising a conductive coil disposed between said composite rotor and said one or more sets of permanent magnet arrays.

Claim 68 (new) : The electro-mechanical battery of claim 67 further comprising an interface hub interconnecting said conductive coil to said composite rotor.

Claim 69 (new) : The electro-mechanical battery of claim 57, wherein said housing is evacuated prior to use of said electro-mechanical battery.